

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

1. (Cancelled)
2. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein magnet field lines of the first permanent magnet configuration penetrate approximately perpendicular into at least one surface of the first superconducting magnet stator.
3. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein the position of rotor axis includes an angle from 0 to 90 degrees relative to a horizontal plane.
4. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein the first permanent magnet configuration comprises at least one permanent magnet ring or a permanent magnet cylinder, the first superconducting magnet stator being at least partially disposed in radial alignment with the first permanent magnet configuration.
5. (Original) A centrifuge according to claim 4, wherein the first superconducting magnet stator at least partially surrounds the first permanent magnet configuration.
6. (Original) A centrifuge according to claim 4, wherein the first permanent magnet configuration at least partially surrounds the first superconducting magnet stator.

7. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein:
the rotor assembly comprises a rotor mounted on a drive shaft; and
the first permanent magnet configuration comprises a plurality of discrete permanent magnets, each permanent magnet being disposed at a discrete location along the length of the drive shaft, the first superconducting magnet stator encircling the drive shaft.

8. (Currently Amended) A centrifuge according to claim [[23]]10, wherein:
the rotor assembly comprises a rotor cup having a substantially cylindrical housing projecting therefrom, the cylindrical housing having an inside face and an outside face; and
the first permanent magnet configuration comprises a plurality of discrete permanent magnets, each permanent magnet being disposed at a discrete location on the inside face of the cylindrical housing along the length thereof, at least a portion of the first superconducting magnet stator being disposed within the cylindrical housing.

9. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein the first permanent magnet configuration comprises:
a plurality of discrete permanent magnets; and
a collector ring disc disposed between each of the permanent magnets.

10. (Currently Amended) A centrifuge comprising:
a rotor assembly rotatable about a rotor axis, the rotor assembly being configured
to hold materials for separation;

a first superconducting magnetic bearing comprising:
a first permanent magnet configuration coupled with the rotor assembly so as to
rotate concurrently with the rotor assembly; and
a passive first superconducting magnet stator being spaced apart from the first
permanent magnetic configuration and the rotor assembly, the first superconducting magnet
stator and first permanent magnet configuration being sufficiently close together to produce a
magnetic field interaction therebetween; and
a motor coupled with the rotor assembly for selectively rotating the rotor
assembly,

wherein the first permanent magnet configuration comprises an integrated lower
part of the rotor assembly and A centrifuge according to claim 23, wherein the first permanent
magnet configuration comprises a first permanent magnet concentrically disposed within a
second permanent magnet.

11. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein the first superconducting magnet stator is connected to a cryogenic unit configured to cool the first superconducting magnet stator.

12. (Original) A centrifuge according to claim 11, wherein the first superconducting magnet stator is coupled directly to an in-housing integrated cryogenic unit to cool down the first superconducting magnet stator to below the critical temperature and to maintain the superconducting state.

13. (Original) A centrifuge according to claim 11, wherein the first superconducting magnet stator has a substantially solid or hollow cylindrical configuration.

14. (Original) A centrifuge according to claim 13, wherein first conducting magnet stator is comprised of a melt textured YBCO superconducting material of the composition $\text{Y}_{1.3-1.7}\text{Ba}_2\text{Cu}_3\text{O}_{7-\delta}$, wherein the material below T=92 K becomes superconducting.

15. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein first superconducting magnet stator comprises a melt textured multi-grain material of high mechanical stability configured to produce damping properties of the magnetic bearing.

16. (Original) A centrifuge according to claim 15, wherein the first superconducting magnet stator comprises a ring-shaped damping discs made from copper, aluminum or their basic alloys.

17. (Currently Amended) A centrifuge according to claim [[23]] 10, further comprising:

a passive second superconducting magnet stator; and
a damping disc interposed between the first and second superconducting magnet stator, the damping disc being formed from copper, aluminum or their basic alloys.

18. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein the first superconducting magnet stator has the geometry of a ring or hollow cylinder.

19. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein first permanent magnet configuration comprises at least one permanent magnet a substantially ring or cylinder like ~~configuration shape~~, the permanent magnet being mounted coaxially about the rotor axis.

20. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein the first permanent magnet configuration comprises a plurality of axial magnetized rings stacked axially with adjacent equal polarities and comprising a high radial magnet flux density.

21. (Currently Amended) A centrifuge comprising:
a rotor assembly rotatable about a rotor axis, the rotor assembly being configured to hold materials for separation;
a first superconducting magnetic bearing comprising:
a first permanent magnet configuration coupled with the rotor assembly so as to rotate concurrently with the rotor assembly; and
a passive first superconducting magnet stator being spaced apart from the first permanent magnetic configuration and the rotor assembly, the first superconducting magnet stator and first permanent magnet configuration being sufficiently close together to produce a magnetic field interaction therebetween; and
a motor coupled with the rotor assembly for selectively rotating the rotor assembly,
wherein the first permanent magnet configuration comprises an integrated lower part of the rotor assembly and A centrifuge according to claim 23, wherein the first permanent magnet configuration comprises at least two annular permanent magnets mounted concentrically one in another in a plane whereby the rings are radially adjacent fitted.

22. (Original) A centrifuge according to claim 21, wherein in the radial direction the upper surfaces of neighboring rings show equal or alternating axial magnetization.

23. (Cancelled)

24. (Currently Amended) A centrifuge according to claim [[23]] 10, wherein the first permanent magnet configuration comprises a single ring or cylinder like permanent magnet.

25. (Currently Amended) A centrifuge according to claim [[23]] 10, further comprising:

a second superconducting magnetic bearing spaced apart from the first superconducting magnetic bearing, the second superconducting magnetic bearing comprising:

a second permanent magnet configuration coupled with the rotor assembly so as to rotate concurrently with the rotor assembly; and

a passive second superconducting magnet stator being spaced apart from the second permanent magnetic configuration and the rotor assembly, the second superconducting magnet stator and first permanent magnet configuration being sufficiently close together to produce a magnetic field therebetween.

26. (Currently Amended) Centrifuge with a rotor unit to process and separate different dense materials has at least one bearing and is combined with a driving device rotatable around the rotor axis, wherein at least one part of the rotor unit is influenced by magnetic forces and is characterized in that the rotor arrangement comprises at least one permanent magnet configuration which interacts at given small distance with at least one adjacent superconducting magnet stator wherein the permanent magnet configuration and the magnet stator comprise at least one passive superconducting magnetic bearing and wherein the permanent magnet configuration comprises an integrated lower part of the rotor unit, wherein first permanent

magnet configuration comprises a first permanent magnet concentrically disposed within a second permanent magnet.